REMARKS

In the outstanding office action, claims 1-19 were presented for examination. Applicant notes the withdrawal of the previous grounds for rejection. All rejections made in the instant application are based on a new reference to Minematsu. It is respectfully submitted that this rejection should be withdrawn on account of basic differences between the method of the present invention and the apparatus and method taught by Minematsu. More particularly, the claims, as amended, clearly recite important differences between Minematsu and the present invention.

While, clearly, Minematsu deals with the problems associated with mispronunciations, it does so with a database built only using mispronounced speech.

In contrast, in accordance with the present invention, as claimed in only some of the claims, a database of properly pronounced English is assembled using a speaker of proper English. Likewise, in accordance with the invention, a database is generated in accordance with the present invention using a speaker or speakers who customarily mispronounce words. This alone supports patentability without any of the other limitations discussed in this amendment.

Minematsu is keyed to word by word mispronunciations, as compared to word and phrase pronunciation errors. This alone supports patentability without any of the other limitations discussed in this amendment. Nor is this a theoretical point, as many mispronunciations occur in the slurring of the end of one word into the beginning of another word. Such issues are thoroughly treated in the Lessac book cited in the specification.

In addition to the above schematic differences in the approach of Minematsu as compared to the methodology of the present invention, there is a fundamental aspect of difference between Minematsu and Lessac. In particular, there are two approaches to the problem of teaching a person to speak properly. The first, and overwhelmingly endorsed approach, in one segment of the academic world and in the scientific

community, is that of the International Phonetic Alphabet, or the "IPA" as it is more commonly called. The essence of this approach is the concept that each sound in a language has a proper pronunciation and that language can be synthesized by an individual by having that individual listen to a proper pronunciation of the sound, hear his own proper or improper pronunciation and thus approach and achieve perfect pronunciation.

In contrast, the Lessac approach is keyed to the feeling of sound and words with analogies to the sounds of musical instruments. While the Lessac approach has been rejected by the scientific community, it has many enthusiastic and prominent followers in the theatrical community. Accordingly, there is a strong bias against the use of Lessac's approach in scientific approaches to voice-oriented problems.

Certainly, not all of the claims are limited to the limitations of using the Lessac approach. But those claims which have that limitation, and that limitation alone, have a content which militates strongly in favor of patentability. It is clear that in the recognition of speech phonemes, a system which is predicated on the proper pronunciation of a finite number of phonemes which can be individually treated to deal with voice-related computer tasks, is easily accepted by the scientific community. In contrast, it is easy to understand the scientific prejudice against use of the Lessac system. This renders application of Lessac non-obvious.

In addition to the differences in the basic nature of the Lessac approach, implemented in accordance with certain aspects of the present invention as claimed in only some of the claims of the present invention, and the International Phonetic Alphabet approach of Minematsu, which clearly shows how the scientific community would have a prejudice against a Lessac approach, objective data conclusively shows the scientific prejudice. In particular, a search was conducted on the United States Patent and Trademark Office database, and 33 patents were found that reference to the "International Phonetic Alphabet". See Exhibit A.

On the other hand, when the same search was conducted on the United States Patent

and Trademark Office database for patents including the term "Lessac", not a single patent was uncovered. See Exhibit B. The evidence is clear that there would be a strong prejudice in technological pursuits against substitution of Lessac techniques for International Phonetic Alphabet approaches. This alone supports patentability without any of the other limitations discussed in this amendment.

Still other aspects of the invention of the present application, standing alone support patentability, and independent claims, focused on these and the above issues have been submitted with this amendment.

Also in accordance with the present invention, a user is presented with an interactive training program in response to the detection of repeated instances or a reliable single instance of pronunciation error. This is not taught by Minematsu. Here again, this alone supports patentability without any of the other limitations discussed in this amendment.

In addition to the above, in accordance with the present invention, speech training is achieved in the course of a speech to text recognition processes. This is not taught by Minematsu.

Turning to the substance of the claims, processing of words and phrases is addressed in claims 1 and 19. As noted above, this allows the system to address errors in word combinations, something not addressed by Minematsu who is limited to dealing with, for example, simple mispronunciations of words by people having a particular characteristic accent, such as Japanese. Accordingly, it is believed that claims 1 and 19 are clearly allowable.

Claims 3, 5, 11, 17 and 24 recite the presentation of the option of receiving speech training to a user. As the any outstanding on section, the same is not taught by Minematsu. Accordingly it is believed these claims are in condition for allowance.

Claims 9, 10, 14, 15, 16, 18 and 22 or relate to various aspects of the Lessac approach and,

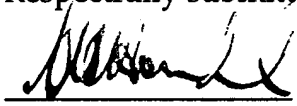
accordingly, are believed to be patentable.

Claims 12, 25 and 26 deal with the sensitivity of error detection for the threshold algorithm, something which is not remotely taught by the prior art, and which, accordingly, is believed to render these claims allowable over the of record.

Claims 21 and 27 deal with a method which incorporates the development of a database using speakers who speaks properly and other speakers who do not pronounce words properly. This is not remotely taught to the prior art and is also believed to be clearly patentable subject matter. As noted above, this is something which is not remotely taught by the part of record and, accordingly, this clearly renders the subject matter of these claims patentable over Minematsu.

In view of the above amendments and the discussion relating thereto, it is respectfully submitted that the instant application, is in condition for allowance. Such action is most earnestly solicited. If for any reason the Examiner feels that consultation with Applicant's attorney would be helpful in the advancement of the prosecution, he is invited to call the telephone number below for an interview.

Respectfully submitted,

By: 

Anthony H. Handal
Reg. No. 26,275
Roger Pitt
Reg. No. 46,996

HANDAL & MOROFSKY
80 Washington Street
Norwalk, CT 06854
(203) 838-8589

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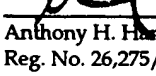

Anthony H. Handal/Roger Pitt
Reg. No. 26,275/46,996

"VERSION OF AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES MADE"

1. (amended) A method of speech recognition using a microphone to receive audible sounds input by a user into a [first] computing device coupled to said microphone, said computing device having a program with a database comprising [consisting of] (i) digital representations of known audible sounds corresponding to proper pronunciations of words and phrases and associated alphanumeric representations of said known audible sounds corresponding to proper pronunciations of words and phrases and (ii) digital representations of known audible sounds corresponding to mispronunciations [resulting from] associated with known [classes of] mispronounced words and phrases, comprising the steps of:

(a) receiving said audible sounds in the form of [the] an electrical output of said microphone;

(b) converting said electrical output corresponding to a particular audible sound into a digital representation of said particular audible sound;

(c) comparing said digital representation of said particular audible sound to said digital representations of said known audible sounds to determine which of said known audible sounds is most likely to be the particular audible sound being compared to the sounds in said database;

(d) outputting as a speech recognition output the alphanumeric representations associated with said audible sound most likely to be said particular audible sound;

(e) receiving an error indication from said user indicating that there is an error in recognition;

(f) receiving from said user an indication of the proper alphanumeric representations of said particular audible sound;

(g) determining whether said error is a result of a known type or instance of mispronunciation; and

(h) in response to a determination of error corresponding to a known type or instance of mispronunciation, presenting an interactive training program from said computing device [computer] to said user to enable said user to correct such mispronunciation.

2. A method of speech recognition as in claim 1, wherein said interactive training program comprises playback of the properly pronounced sound from a database of recorded sounds corresponding to proper pronunciations of said mispronunciations resulting from said known classes of mispronounced words and phrases.

3. A method of speech recognition as in claim 2, wherein the user is given the option of receiving speech training or training the program to recognize the user's speech pattern.

4. A method of speech recognition as in claim 3, wherein said determination of whether said error is a result of a known type or instance of mispronunciation is performed by comparing the mispronunciation to said digital representations of known audible sounds corresponding to mispronunciations resulting from known classes of mispronounced words and phrases using a speech recognition engine.

5. A method of speech recognition as in claim 1, wherein the user is given the option of receiving speech training or training the program to recognize the user's speech pattern.

6. A method of speech recognition as in claim 1, wherein said determination of whether said error is a result of a known type or instance of mispronunciation is performed by comparing the mispronunciation to said digital representations of known audible sounds corresponding to mispronunciations resulting from known classes of mispronounced words and phrases using a speech recognition engine.

7. (amended) A method of speech recognition as in claim 1, wherein said database consisting of (i) digital representations of known audible sounds and associated alphanumeric representations of said known audible sounds and (ii) digital representations of known audible sounds corresponding to mispronunciations resulting from known classes of mispronounced words and phrases, is generated by the steps of speaking and digitizing <u>on a second computer</u> said known audible sounds and said known audible sounds corresponding to mispronunciations resulting from known classes of mispronounced words and phrases, <u>and transferring the same to said first computing device.</u>

8. (cancelled) A method of speech recognition as in claim 7, wherein said database has been introduced into said computing device after said generation by speaking and digitizing has been done on another computing device and transferred together with voice recognition and error correcting subroutines to first computing device.

9. A method of speech recognition as in claim 1, wherein said interactive program instructs the user using Lessac System techniques.

10. A method of speech recognition as in claim 1, wherein, said interactive program instructing the user in the correct pronunciation of said sound in terms of the sound of a musical instrument.

11. A method of speech recognition as in claim 1, wherein said presenting an interactive training program from said computer to said user to enable said user to correct such mispronunciation is optional and is performed when elected by the user.

12. (amended) A method of speech recognition as in claim 1, wherein said user is presented with an interactive training program in response to the detection of repeated instances or a reliable single instance [or] <u>of</u> pronunciation error[s].

13. A method of speech recognition as in claim 1, wherein said user is given the option of correcting said digital representations of known audible sounds.

14. (amended) A method of speech recognition using a microphone to receive audible sounds input by a user into a first computing device having a program with a database consisting of (i) digital representations of known audible sounds and associated alphanumeric representations of said known audible sounds and (ii) digital representations of known audible sounds corresponding to mispronunciations resulting from known classes of mispronounced words and phrases, comprising the steps of:

(a) receiving said audible sounds in the form of the electrical output of said microphone;

(b) converting a particular audible sound into a digital representation of said

audible sound;

(c) comparing said digital representation of said particular audible sound to said digital representations of said known audible sounds to determine which said known audible sounds is most likely to be the particular audible sound being compared to the sounds in said database;

(d) outputting as a speech recognition output the alphanumeric representations associated with said audible sound most likely to be said particular audible sound;

(e) determining whether there is an error in pronunciation to generate an error indication indicating that there is an error in recognition;

(f) determining whether said error is a result of a known type or instance of mispronunciation in response to the detection of repeated instances or a reliable single instance of mispronounciation; and

(g) in response to a determination of error corresponding to a known type or instance of mispronunciation, presenting an interactive training program from said computer to said user to enable said user to correct such mispronunciation in accordance with Lessac techniques.

15. A method of speech recognition as in claim 14, said interactive program instructing the user in the correct pronunciation of said sound in terms of the sound of a musical instrument.

16. A method of speech recognition as in claim 14, wherein said interactive program instructs the user using Lessac System techniques.

17. A method of speech recognition as in claim 14, wherein said presenting an interactive training program from said computer to said user to enable said user to correct such mispronunciation is optional and is performed when elected by the user.

18. A method of speech recognition as in claim 14, said interactive program instructing the user in the correct pronunciation of said sound in terms of the sound of a musical instrument.

19. (amended) A method of speech recognition [as in claim 14, wherein said user is given the option of correcting said digital representations of known audible sounds.] using a microphone to receive audible sounds input by a user into a computing device coupled to said microphone, said computing device having a program with a database comprising (i) digital representations of known audible sounds corresponding to proper pronunciations of words and phrases and associated alphanumeric representations of said known audible sounds corresponding to proper pronunciations of words and phrases and (ii) digital representations of known audible sounds corresponding to mispronunciations, comprising the steps of:

(a) receiving said audible sounds in the form of an electrical output of said microphone;

(b) converting said electrical output corresponding to a particular audible sound into a digital representation of said particular audible sound;

(c) comparing said digital representation of said particular audible sound to said digital representations of said known audible sounds to determine a match with the one of said known audible sounds most likely to be the particular audible sound being compared to the sounds in said database;

(d) outputting as a speech recognition output the alphanumeric representations associated with said audible sound most likely to be said particular audible sound;

(e) outputting an error indication in response to a match with a known audible sound corresponding to a known mispronunciation; and

(f) in response to a determination of error corresponding to a known mispronunciation, presenting an interactive training program from said computing device to said user to enable said user to correct such mispronunciation.

20. (new) A method of speech recognition using a microphone to receive audible sounds input by a user into a computing device coupled to said microphone, said computing device having a program with a database comprising (i) digital representations of known audible sounds corresponding to proper pronunciations of phonemes and associated alphanumeric representations of said known audible sounds corresponding to proper pronunciations of phonemes and (ii) digital representations of known audible sounds corresponding to mispronunciations, comprising the steps of:

(a) receiving said audible sounds in the form of an electrical output of said

microphone;

(b) converting said electrical output corresponding to a particular audible sound into a digital representation of said particular audible sound;

(c) comparing said digital representation of said particular audible sound to said digital representations of said known audible sounds to determine a match with the one of said known audible sounds most likely to be the particular audible sound being compared to the sounds in said database;

(d) outputting as a speech recognition output the alphanumeric representations associated with said audible sound most likely to be said particular audible sound;

(e) outputting an error indication in response to a match with a known audible sound corresponding to a known mispronunciation; and

(f) in response to a determination of error corresponding to a known type or instance of mispronunciation, giving the user the option of receiving speech training or training said program to recognize the user's speech pattern; and

(g) in response to exercise of said option, presenting an interactive training program from said computing device to said user to enable said user to correct such mispronunciation.

21. (new) A method of speech recognition using a microphone to receive audible sounds input by a user into a computing device coupled to said microphone, said computing device having a program with a database comprising (i) digital representations of known audible sounds corresponding to proper pronunciations of phonemes and associated alphanumeric representations of said known audible sounds corresponding to proper pronunciations of phonemes and (ii) digital representations of known audible sounds corresponding to mispronunciations, comprising the steps of:

(a) forming a database by (i) having a person, who normally speaks said known audible sounds properly, speak said known audible sounds, and digitizing said known audible sounds spoken by said person who properly speaks said known audible sounds; and (ii) having a person who usually speaks said known audible sounds corresponding to mispronunciations and digitizing said known audible sounds spoken by said person who usually speaks said known audible sounds corresponding to mispronunciations;

(b) receiving said audible sounds in the form of an electrical output of said microphone receiving speech to be recognized;

(c) converting said electrical output corresponding to a particular audible sound into a digital representation of said particular audible sound;

(d) comparing said digital representation of said particular audible sound to said digital representations of said known audible sounds to determine a match with the one of said known audible sounds most likely to be the particular audible sound being compared to the sounds in said database;

(e) outputting as a speech recognition output the alphanumeric representations associated with said audible sound most likely to be said particular audible sound;

(f) outputting an error indication in response to a match with a known audible sound corresponding to a known mispronunciation; and

(g) in response to a determination of error corresponding to a known mispronunciation, presenting an interactive training program from said computing device to said user to enable said user to correct such mispronunciation.

22. (new) A method of speech recognition using a microphone to receive audible sounds input by a user into a computing device coupled to said microphone, said computing device having a program with a database comprising (i) digital representations of known audible sounds corresponding to proper pronunciations of phonemes and associated alphanumeric representations of said known audible sounds corresponding to proper pronunciations of phonemes and (ii) digital representations of known audible sounds corresponding to mispronunciations, comprising the steps of:

(a) receiving said audible sounds in the form of an electrical output of said microphone receiving speech to be recognized;

(b) converting said electrical output corresponding to a particular audible sound into a digital representation of said particular audible sound;

(c) comparing said digital representation of said particular audible sound to said digital representations of said known audible sounds to determine a match with the one of said known audible sounds most likely to be the particular audible sound being compared to the sounds in said database;

(d) outputting as a speech recognition output the alphanumeric representations

associated with said audible sound most likely to be said particular audible sound;

(e) outputting an error indication in response to a match with a known audible sound corresponding to a known mispronunciation; and

(f) in response to a determination of error corresponding to a known mispronunciation, presenting an interactive training program from said computing device to said user to enable said user to correct such mispronunciation using Lessac System techniques.

23. (new) A method of speech recognition using a microphone to receive audible sounds input by a user into a computing device coupled to said microphone, said computing device having a program with a database comprising (i) digital representations of known audible sounds corresponding to proper pronunciations of phonemes and associated alphanumeric representations of said known audible sounds corresponding to proper pronunciations of phonemes and (ii) digital representations of known audible sounds corresponding to mispronunciations, comprising the steps of:

(a) receiving said audible sounds in the form of an electrical output of said microphone receiving speech to be recognized;

(b) converting said electrical output corresponding to a particular audible sound into a digital representation of said particular audible sound;

(c) comparing said digital representation of said particular audible sound to said digital representations of said known audible sounds to determine a match with the one of said known audible sounds most likely to be the particular audible sound being compared to the sounds in said database;

(d) outputting as a speech recognition output the alphanumeric representations associated with said audible sound most likely to be said particular audible sound;

(e) outputting an error indication in response to a match with a known audible sound corresponding to a known mispronunciation; and

(f) in response to the detection of repeated instances or a reliable single instance of pronunciation error, presenting an interactive training program from said computer to said user to enable said user to correct such mispronunciation.

24. (new) A method of speech recognition as in claim 23, wherein said presenting an

interactive training program from said computer to said user to enable said user to correct such mispronunciation is optional and is performed when elected by the user.

25. (new) A method of speech recognition as in claim 21, wherein said user is presented with an interactive training program in response to the detection of repeated instances or a reliable single instance of pronunciation error.

26. (new) A method of speech recognition as in claim 22, wherein said user is presented with an interactive training program in response to the detection of repeated instances or a reliable single instance of pronunciation error.

27. (new) A method of speech recognition as in claim 22, wherein said database comprising (i) digital representations of known audible sounds corresponding to proper pronunciations of phonemes and associated alphanumeric representations of said known audible sounds corresponding to proper pronunciations of phonemes and (ii) digital representations of known audible sounds corresponding to mispronunciations is formed by (i) having a person, who normally speaks said known audible sounds properly, speak said known audible sounds, and digitizing said known audible sounds spoken by said person who properly speaks said known audible sounds; and (ii) having a person who usually speaks said known audible sounds corresponding to mispronunciations and digitizing said known audible sounds spoken by said person who usually speaks said known audible sounds corresponding to mispronunciations.